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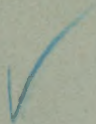
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INFANTS,  
THEIR CHRONOLOGICAL PROGRESS,

BY



PROF. STANFORD E. CHAILLÉ, M. D.,

TULANE UNIVERSITY OF LOUISIANA.

WITH COMPLIMENTS  
OF



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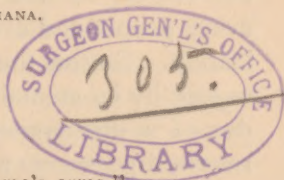
# INFANTS, THEIR CHRONOLOGICAL PROGRESS,

BY

STANFORD E. CHAILLÉ, A. M., M. D.,

Professor Physiology, Pathological Anatomy and Hygiene,

TULANE UNIVERSITY OF LOUISIANA.



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"At first, the infant  
Mewling and puking in the nurse's arms."

Life's first requirement is nutrition or self-maintenance, and the second is reproduction or maintenance of the species. No living thing can escape the bondage of the former, and few adults do escape tribute to the latter. The result, for most men and women, is co-partnership in a baby. Many of these co-partners, misled by love and vanity, attribute superlative merits to their own offspring; some few, timid and inexperienced, are distressed by idle fears of deficiencies; so that, on the whole, few parents estimate aright the progress which the ordinary average baby, especially if their first one, ought to make. Doctors and nurses have better knowledge, but even doctors, if as ignorant as myself, must have often deplored their inability to answer with satisfactory accuracy the very natural questions, frequently propounded by parents, concerning the age at which this, that, and the other indication of progress

should be developed. For this reason it is worth while to note, more fully than is recorded in any book which I have found, the progress which should be expected of the average baby.

But, however desirable it may be to restrain within proper bounds the vanity and fears of parents, the evolutionist finds graver reasons still for a more accurate record of baby-progress. Forced to regard the various wondrous stages of development, inside the womb, either as an inexplicable mystery or as a recapitulation of the progress of animal life from its lowest to its highest manifestation, and, therefore, as a memorial of man's ante-human ancestry; the evolutionist is also forced to regard life, outside the womb, as a mere recapitulation of man's ancestral progress upwards from his primitive savage condition, through the stages, termed barbarous and semi-barbarous, which every people and every infant must traverse to attain civilization. So that the careful study of the infant's progress, especially its mental and moral progress, justifies the paradox of a distinguished evolutionist who claims, that this research possesses a "peculiar *antiquarian* interest." All parents who have little children can see any day if they look aright, the sight, which the dying gladiator, "butchered to make a Roman holiday", saw only in a vision, "his young *barbarians* all at play." Having long entertained this view, I have been forced, as to even the babies in which I have enjoyed a co-partnership, to substitute, for the common expression "dear little angel," the more truthful phrase "darling little savage." And the sooner all parents recognize that their infants are, in truth, born-savages, for whose gradual development into civilized adults they are responsible, the better will it be for the future of these infants. This view would not, at any rate, increase the number, at present very great, of the class now termed "hoodlums," who are no more than savages living in the midst of, yet left undeveloped by, civilization.

For reasons now given, evolutionists have been prompted, in recent years, to investigate more thoroughly the phe-

nomena of infant progress, and even Charles Darwin was induced to contribute, ten years ago, a few instructive pages entitled "A Biographical Sketch of an Infant." Such researches have already conferred some and are destined ultimately to confer far greater benefits on that important branch of the science of education, termed pedagogics. Teachers greatly need more accurate knowledge of the mental and moral faculties of the average child at different ages. To what extent are these various faculties developed, what peculiarities and what deficiencies characterize different ages? For instance, a more thorough but still incomplete study of the faculty of *attention*, or capacity to concentrate the mind, has proved that teachers have habitually expected from children more than the brain of the average child is capable of; that no ordinary child of seven years of age should be expected to concentrate the mind, continuously on one subject, more than fifteen minutes, and if under eighteen years not more than thirty minutes. Should *memory* ever be duly studied, it will no doubt be proved that too great a burthen is usually imposed on this faculty also. It is also believed that, while attention and memory are imposed upon, the training of the senses or of observation, of the judgment, and of the imagination is habitually and greatly neglected.

If this introduction has induced the reader to regard the study of infant progress from my own point of view, he will probably be disappointed, as I have been, with the results, about to be submitted, of my study of the subject. Not only are there regrettable omissions and deficiencies, but there are also statements for which I decline any responsibility except that of citing them correctly from good authorities. I have attempted to record specially the average baby only and not the exceptional one; and I have confined myself to very brief statements of subjects to be found in the text-books, such as teething, the pulse, etc. I shall be content if this imperfect article should serve to add to the lively emotional interest, always felt in the infant and its progress, a greater intellectual interest, and should stim-

ulate others to study the subject and record the results as thoroughly as should be done.

Since it would be tedious and less convenient for reference to record, in the chronological order adopted, the facts gathered in regard to the interesting subjects, the eyes and the hair, and that most important subject, the growth of the body, these facts have all been transferred to the close of this article.

FIRST FOUR WEEKS OF LIFE.—The cord begins to wither on the first, dries up by the third, sloughs off about the seventh, and cicatrizes about the tenth to twelfth day.

Exfoliation of the epidermis begins the first week and continues usually to the fortieth day.

The pulse beats per minute about 140 times at birth; 128 at six months; 120 at one year; 110 at two years; and 90 to 100 at three years.

From birth, the reflex acts, sucking, crying, sneezing, hiccoughing, yawning, stretching, etc., are all well done. The nervous phenomena presented are those merely of a reflex automatic machine, with very little active volition and little distinct perception of external objects. One must descend low down in the scale of animal life to find an adult prototype of the new born infant, whose chief instinct is gluttony and whose sole apparently intelligent voluntary act is to suck.

All the senses are incapable of the delicate appreciations familiar to adults. For some days, taste, touch and smell are apparently better developed than hearing and sight. But even taste, which appears to be the sense best developed at first, is very inferior to the adult's, and continues so at least to the sixth month; babies will swallow, without apparent disgust and even with relish, things nauseous to adults. While there is common sensation, yet *touch* is so imperfect that it is long, probably some months, before a new born baby can appreciate the *place* on its own body where it may be touched and still less the nature of *the thing* which may touch it. Sensitiveness to bad smells or to odors of any kind is seldom shown before the fifth week.

Babies are at first apparently deaf, but, during the first fortnight, susceptibility to sound is usually observed; sudden sounds causing them to start and to blink. They take months to learn to appreciate the *direction* and the *distance* of sound.

During even the first week babies probably distinguish light from darkness, but not until the second week will their eyes follow a candle. In fact, nothing except a candle or a light will cause them to fix their eyes, from usually about the tenth to even the forty-fifth day. It is alleged that ordinarily they do not begin to distinguish objects, even confusedly, until about the end of the fourth week. Physiology justifies the belief that the baby must see two images, both flat and upsidedown, of every object looked at; and it is certain that months are taken to acquire appreciation of the *solidity* and *distance* of visual objects.

*Fear* may be indicated during the first weeks, but is not usually very manifest before the third month. Babies usually first smile after three weeks of age.

At fifteen days old, and probably earlier, a feather, passed over the eyes and nose, may cause the eyes to close, nasal contraction and a frown.

Darwin says that the first tear is shed from the twentieth to the one-hundredth day. I have trustworthy evidence of one baby who shed its first tear before it was fourteen days old, and I have now under observation a baby who shed its first tear, a solitary one and out of one eye only, on the ninety-eighth day; yet this infant has never lacked the usual baby accomplishment of crying often and vociferously. The lachrymal glands usually begin to secrete during the third and fourth month, and the salivary glands during the fifth and sixth months. These facts justify the inference that the pancreas and other conglomerate glands gain slowly their power to secrete.

ONE MONTH (30 to 60 days) OLD.—Before the fortieth day the hands are moved awkwardly but voluntarily to the mouth, but other movements of limbs and body continue to be vague, jerky, purposeless.

At thirty to forty days luminous objects give manifest pleasure.

About the fifth week repugnance to some bad smells may be shown, and at six to eight weeks some odors attract while others repel.

About the fifth week the mouth and tongue begin to move in crying, instead of this being exclusively laryngeal as heretofore.

The first expression of *disgust* has been noted at the seventh week.

TWO MONTHS OLD.—Babies begin to acquire some idea of distance, so that they less frequently scratch their faces without intending it.

At eleven weeks old a baby may take a bottle in the right hand and a week later in the left.

At two months old no appreciation may be shown of ordinary sounds, such as a footstep in the room; and no color be noticed except red.

At this age *anger* may be shown and there may be a frown due, not as heretofore to physical pain, but to mental displeasure.

At two and one-half months old a bottle of water, instead of milk, may be refused with an expression of disgust.

A genuine laugh, that is a merry expression with sound, is not apt to be observed before the sixty-fifth day. In one case the first little chuckle occurred on the eighty-seventh day.

THREE MONTHS OLD. The head can usually be held erect, when a baby is three to three and a half months old.

About the end of the third month the distinct color of the skin, whether blonde or brunette, is usually established.

Tears are usually shed the third or fourth month.

The hands are voluntarily lifted to the face much oftener; they are stretched out also to near objects, and the arms are held out to the mother.

Heretofore, hearing and sight have been the senses

chiefly employed in self education, but at the third month the infant begins to employ touch, to take hold of and feel everything.

Sounds, if rythmical, are apt to give pleasure.

At three to five months old, babies are fond of brilliant colors only, as are adult savages, and may be amused with some pictures.

From the third to the tenth month, fear is very plainly shown, and is aroused far more through the ear than the eye.

When three months old, there may be evidence of dreaming, also of jealousy, and also of anger indicated by pushing away things disliked.

When three and a half months old, a baby may be amused by the play of covering and uncovering the face.

Also at this age, though usually not until six or seven months old, there may be varying cries and joyous babblings, but only vowel sounds, and there may be capacity to distinguish several parts of the body; for instance, if asked "where are your feet?" the baby may have learned to look at them. Thus there may be shown, even when three and a half months old, the germ of an effort at language and power to comprehend it.

FOUR MONTHS OLD.—A baby can sit upright and can execute a few special actions with his hands although he may still often fail to seize objects brought close to him. The use of hands and arms is developed much sooner than is the use of the feet and legs.

At four to six months old, all babies like being sung or played to, and some even when one month old.

They do not readily direct their eyes to the source of a sound.

They look intently at their own hands or other objects close to them, and are then apt to squint.

Fear, the first emotion manifested, is apt to be very plainly shown when four and a half months old; also violent anger, with rush of blood to face and scalp.

Darwin observed a very distinct sob on the 138th day.

At four and a half months old (even on the 102d day, in one case) a baby may smile at an image in a mirror, but is not likely to show, before the sixth month, any appreciation of the fact that what is seen is only an image, indicated, for instance, by turning away from the mirror to look at the person who causes the image to make a grimace. Infants enjoy looking at their own image, but the higher apes get angry, which is not astonishing when their ugliness is considered. May not their anger indicate that apes have an æsthetic sense, similar to man's?

Though not usual, there may be evidence at four and a half months, that a voice is recognized, and such sounds may be made as ap, pa, mam, ma.

**FIVE MONTHS OLD.**—Saliva usually begins to flow, as is stated, at the fifth or sixth month and apparently as a preliminary to dentition. However, I have seen it flow freely at the close of the second month, and without apparent connection with dentition.

A baby may attempt to move in time with music when five months old, and he may associate his own name with himself, and his eyes may seek his nurse if her name be called. Further evidence of the dawn of ideas and associated ideas may be manifested by a baby's anger, if not taken out of doors as soon as its cloak and hat have been put on.

In one case Darwin observed at five and a half months, the first articulate sound "da," without attachment thereto of any meaning.

**SIX MONTHS OLD.**—At this age a baby sits up; arms, hands and fingers can accomplish many delicate movements, and playthings are enjoyed.

A baby may be induced, even when six months old, to swallow disagreeable things, merely by changing the color.

Lively music gives more pleasure than grave, sweet music; however, a musical education can rarely be begun before the fifth or sixth year. The drum, then the trumpet are the first instruments of primitive man and the favorites of children.

There may be evidences of painful dreams, and also of efforts to imitate.

There is some comprehension of the meaning and feelings of others by means of their facial expressions. Some faces please while others displease. Sympathy may be manifested by a baby's expression, when, for instance, the mother cries or pretends to do so.

Babies respond with jumps and other evidences of gratification to attempts to amuse them; will stroke the mother's face and babble inarticulate sounds of admiration. They are apt to begin to make a series of sounds with the vowel a (long not short), ai, au, etc. In first efforts at speaking there is always marked preference for a and other vowels.

SEVEN MONTHS OLD.—Teething is often irregular. Its usual progress will be stated: Generally it begins at the end of the sixth or beginning of the seventh month and terminates about the twenty-fourth month. Should there be no teeth by the tenth or twelfth month, the cause should be sought for, and will usually be found in defective nutrition and sanitation. The twenty teeth of infancy are usually cut in the following order, viz:

Two central incisors of lower jaw when 4 to 8 months old.

Two central incisors of upper jaw when 8 to 10 months old.

Two lateral incisors of upper jaw when 8 to 10 months old.

Two first molars of upper jaw when 12 to 15 months old.

Two lateral incisors of lower jaw when 12 to 15 months old.

Two first molars of lower jaw when 12 to 15 months old.

Four canine or eye-teeth when 16 to 20 months old.

Four last molars when 20 to 30 months old.

After the sixth month, babies sleep less in the day and chiefly at night.

Usually at the seventh and eighth month they begin to crawl on the floor.

A baby may be able to shake its head when told to do

so ; but even at seven and a half months old it is usually unable to follow with the eyes an object swinging rapidly.

At this age the nurse is usually associated with her name.

If not at the sixth month then by the seventh month babies usually begin to mumble, m, m, m and p, p, p, which soon become mamma and papa.

**EIGHT MONTHS OLD.**—At this age the infant usually begins to imitate sounds, and may articulate several syllables. Speech is at first always of monosyllables and of these reduplicated, dyssyllables come slowly, at about the twentieth month, and polysyllables still more slowly.

**NINE MONTHS OLD.**—By the ninth or tenth month babies usually begin to rise on their feet, by clinging to some object, and to learn to walk.

They associate their own names with their image in a mirror, and begin to look behind to discover the cause of a shadow.

Darwin says that at this age an infant's capacity to acquire associated ideas surpasses that of the cleverest full grown dog.

**TEN MONTHS.**—A vivid appreciation of odors is manifested from the tenth to the fifteenth month.

At this age a child may be taught to understand that it is naughty to cry in order to get what is wanted; and also taught, even earlier than the tenth month, to make itself understood about making a mess in its cradle, and to be afraid to do so.

Usually only two or three words can be spoken.

**ELEVEN MONTHS (335-365 days) OLD.**—The anterior fontanelle should not be as large as a dime, and by the twentieth to twenty-fourth month it ought to have closed sufficiently to be imperceptible; however, complete ossification, which may occur from the fourteenth month to three and a half years of age, usually occurs during the second year.

At the age of eleven months violent passion may be shown, as by pushing away and beating playthings. Many actions may be imitated, and the child may have been taught to be afraid of fire.

Gestures, intonations of voice, numerous words and even a few short phrases may be understood, although only a few syllables can be spoken; many animals, unable to speak a word, can yet be taught to understand many words. Darwin's child invented his first word "*mum*," (for food, as also other things) when exactly one year old, but he had understood his nurse's name five months before.

An infant may attempt before one year old to accompany its nurse in singing.

**TWELVE MONTHS OR ONE YEAR OLD.**—The most notable progress, during the first twelve months, is in the development of the senses and of voluntary motion; and, during the second twelve months, in walking and speaking.

The dawning of speech is the first decisive indication of development from a lower to the highest animal.

Although infants still prefer, at this age, the role of quadruped, yet most of them can toddle a few steps by themselves, and before the second year can not only stand, but begin to run alone.

Even when a year old, a child is readily deceived about the distance of a sound.

Seldom does a baby manifest spontaneous affection, as, by voluntary, unsolicited kissing, until after one year of age. But anger with revenge is apt to be shown, and while their anger is often justifiable yet it is not infrequently due to caprice, jealousy, hatred.

From twelve to fifteen months of age, children usually manifest plainly that they are full heirs of the traits which characterize the savage, primitive man, viz: self-consciousness, egotism, credulity, impulsiveness, irascibility, jealousy, cruelty, obstinacy, cunning and dissimulation. No one ought to be either astonished or shocked if children, at this age, steal and lie: for instance, steal sugar and deceive about it. Nature's first law is self-maintenance, that is, self-preservation, and lying and stealing must *seem* to the child, much oftener and more urgently than to the adult, indispensable to self-preservation. It can do no good to deplore that a little child is no better than his

adult ancestors were ; but it will do much good to prove to him conclusively that, although lying may seem to him needful for self-preservation, yet that, under the civilized conditions of his existence, his self-preservation depends really on his truthfulness. Practical demonstrations of this lesson, if enforced, even with a switch, will not tend to postpone the development of the moral sense, which depends for its growth most notably on the culture given it in childhood.

The first evidences of dramatic art, which becomes so strongly pronounced in most children, and also of moral sense is said to have been observed as early as the thirteenth month.

When one year old, infants may imitate the voices of dogs, cats, pigs, donkeys, etc., and may have advanced sufficiently as linguists to put two words together. While they usually begin to speak by the age of one year, lisping a few words, yet they may not articulate distinctly until two years old. One authority states his belief that the most intelligent children are apt to be dilatory in learning to speak, but that these dilatory children speak, when they do learn to do so, with greater ease and accuracy.

**FIFTEEN MONTHS OLD.** — Great progress has been made in motor activity; the hand has become trained to touch with considerable discrimination; a spoon or a glass can be carried to the mouth.

The eye and ear have become more capable of appreciating distance.

The frowns, irritable ways and angry voice of a parent may be imitated by a child when only fifteen months old, and be transmitted thus early from sire to son.

Jealousy, so common and active in lower animals, becomes plainly manifest.

The child may be rendered very unhappy by the disapproval of others, as, for instance, when its mother says "I am angry, baby." At sixteen months pity, or capacity to feel another's woe, may be plainly manifested. The child, heretofore exclusively egotistic, may at this early age thus evince the budding of altruism.

After fifteen months old, children begin to *compare*, seeking much more for resemblances than for differences, a common characteristic of uncultivated adults with inferior minds.

Most children at fifteen months will drolly counterfeit the voices, cries and songs of animals familiar to them.

EIGHTEEN MONTHS TO TWO YEARS OLD.—A spade and pail, mud and sand, are highly valued at this age. While such proclivities—harmless, pleasure-giving and even instructive to a child—should not be injudiciously interfered with, propensities, sure to be harmful ultimately, demand imperatively judicious interference; there are very many spoiled children, but they are only about half as numerous as are weak, wicked or injudicious parents, because every such child has usually two such parents who do the spoiling or suffer it to be done.

Children are slow to acquire an appreciation of the solidity, distance, dimensions and movement of objects; all that they can do, even at two years of age, is to estimate these things as to objects in reach of both eye and hand.

A strong tendency is shown to imitate the actions of adults, and to ask questions.

At this age the difference between *one*, *two* and *several* is appreciated; at two and one-half years old a child may count to twelve, but ordinarily, even at three years of age, they cannot count and appreciate more than *four* or *five*; and it takes them from the sixth to the seventh year to get up to one hundred. It should be remembered that there are adult savages, Australians and others, who never can count over four.

At this age a child will usually imitate any word proposed to it with some correctness, but certain letters are apt to be pronounced imperfectly, especially short a (as in hat); the dental aspirates, s and z; and the palatals d, g, k, l, n, q, r and t. A characteristic of baby-articulation is great trouble in pronouncing the difficult letter r, which is learned very slowly. At first l is substituted for r, and then either one for the other.

**TWO TO THREE YEARS OLD.**—When two years and three months old, Darwin's child would throw books and sticks at offenders; and gave evidence, for the first time, of shyness.

At two and a-half years of age children are apt to become very sensitive to ridicule, although their sense of the ridiculous is weak under three years of age.

One case is recorded of an adult, who, on seeing an object, remembered vaguely that he had seen it before, and there was good evidence that this had occurred only once and when he was eighteen months old. However, the general evidence is that there is no memory of anything occurring during the first two years of life.

Children up to two years of age do not attach meaning to abstract words, such as goodness, wickedness, ugliness: and their reasoning power, from two to three years old, does not apparently surpass that of adult lower animals, such as the dog.

From two to four years of age, children are transparent egotists, very self-conscious and almost destitute of moral sense. They appreciate as bad, only what is forbidden and punished, and as good what is praised and rewarded. Their parents are their moral law. Even at five years of age, their standard of morality is not high and is liable to frequent and serious relapses. However, they begin to have pride and to be capable of being shamed. But, even when two years old a child may show some self-introspection, some self-distrust and the germ of a wounded conscience—as indicated by such remarks as: “I would like to be always good, why can't I?” and “I feel that I cannot be good.”

At two to three years of age children, not infrequently, iterate and reiterate the same word or words without any meaning and as if imbecile although not so.

**THREE YEARS OLD.**—The child can understand the idea not only of yesterday but also of the day before yesterday.

The odious tendency to mockery, for instance, of the infirmities of others, rarely shows itself until after the age

of three years, unless earlier developed by most reprehensible encouragement and example.

Darwin's child, when three years and twenty-three days old had good memory of what had occurred six months before.

At the age of three, the tendencies of children still begin and end with self. They are prone to cruelty, delighting, as much as other savages, in such jollifications as the conjunction of a tin-pan and a dog's tail. They have little notion of justice to others than themselves: are apt to invent very plausible explanations to account for their own evil deeds, and very improbable explanations for the offensive actions of others to them. Until otherwise trained, the child's standard of justice and morality, requires the following decided modification of Pope's lesson:

"That mercy I to others show,  
[Please don't] show to me."

The views above maintained, in regard to the natural character of untrained children, are not in harmony with the popular traditional belief, which assigns to them, in higher degree than to adults, such great virtues as faith, innocence and truthfulness. If they have greater faith, so also have they the greater credulity characteristic of feeble minds; if they be more innocent or harmless, so, also, are their power and their temptations to do harm proportionately less; if their truthfulness be greater, so, also, are their capacity and their temptations to deceive correspondingly less, and, after all which can be said, their truthfulness halts, as notably as does the adults's, at self and any suffering for truth's sake.

#### EYES AND HAIR.

At what age do the eyes of infants begin to change color, and at what age is this change accomplished? To what extent does the hair of the head (which grows about one-half inch a month in adults), grow at different periods of infant-life, what should be its length at different ages, and when does its change of color begin and end?

To such questions considerable research has yielded answers, lacking in satisfactory precision, however; the following facts, gathered in this search, may prove of interest. These facts have been derived chiefly from English authors, and refer, in the main, to the people of Great Britain; even in this population there are considerable differences as to color between the English, Scotch, Welsh and Irish, but I shall attempt to approximate only the general average.

Darwin teaches that hair is first developed during the fifth month of foetal life; that it then grows on the eye-brows and face, and around the mouth as a moustache; that, at first, this fine hair, or lanugo, is longer on the face than on the head; and that during the sixth month of intra-uterine life the hair thickly covers, with the exception of the palms and soles, the whole surface of the body, even the forehead and ears.

The forehead, even of the new-born infant, is covered with short, fine hair; and this hair, on the head, is generally blonde, fine, scanty, and less than a half inch long. The eyes of the new-born are always, as is alleged, a dark blue. A high authority states that the eyes generally begin to change color from the sixth to the eighth week. Galton teaches that the eyes begin to change within a few days; that "the color of eyes and hair is liable to change during childhood and youth;" that the color of the eyes is more persistent than of the hair; and that "the hair of children darkens considerably as they grow older, even up to the time when it begins to turn gray." Topinard says that "it is common for the hair, and in a less degree for the eyes, to become darker during the second period of childhood (7 to 14 years) or later." Authorities also teach that eyes and hair darken to less extent in females than in males; that the hair of females has less tendency to turn gray; that more girls have red hair than boys; and that dark hair tends to turn gray earlier than hair of other colors. As is well known, far more men than women are bald.

The various tables in Roberts' Anthropometry are difficult to digest mentally, but they justify, I believe, the following approximative estimates concerning the color of the eyes.

About 70 per cent. of the dark blue eyes of the new-born, will continue at the age of six months, to be "light," that is, some shade of blue or grey, and they will continue to be "light" not only at the fifth year, but also at maturity. The blue eyes of some 15 per cent. of the new-born will have become "dark" by the sixth month, and will so continue. The blue eyes of the remaining 15 per cent. of the new born will have become, by the sixth month, neutral or "mixed" eyes, that is brownish or green; one-third of these "mixed" eyes will have become "dark" by the fifth year, and another third will have become "dark" at maturity, so that at this last period of life, the "dark" eyes will have been increased, at the expense of the mixed eyes, from some 15 to about 25 per cent.

Roberts' tables will also, as I believe, justify as approximative estimates, about the color of the hair, the following tabular statement:

Color of Hair, at	Birth.	6 Mos.	5 Yrs.	Maturity.
Light.....	100	75	60	45
Dark.....	—	21	36	51
Red.....	—	4	4	4

Although the above table fails to indicate it, yet golden red hair strongly tends to become dark and to greater degree than does auburn red hair.

The length of the hair at birth and its rate of growth during infancy vary so much, in different cases, that more numerous observations, than I have made, would be required to justify a statement of what are the general averages. It is certain that, for several months, the hair may not be even one inch long; and there is reason to believe that when it once begins to grow well it may grow even an inch a month.

## GROWTH AS SHOWN BY WEIGHT, HEIGHT AND CHEST-GIRTH.

Growth furnishes much the best evidence of healthy progress. Weight is the most trustworthy factor, next is height, and next is chest-girth.

The statements and table to follow require some explanation. Few books have been found which contain the desired details on this subject, and not one recording the growth *monthly* throughout the first year; after the fifth year there are abundant records, but even these are often at variance. Not only do different authorities often vary materially, but their discrepancies are rendered difficult to reconcile by the fact that the figures given have been obtained from individuals differing in race, in sex, and in social and physical conditions. Differences due to so many important causes cannot be reconciled so as to secure scientific accuracy in one brief table. Hence, no more is claimed for the figures in my table than that they represent approximations to the truth, sufficiently close to serve doctors and parents as useful guides in determining what should be the growth of a healthy average child.

Since the first year is by far the most critical period of life, and since weight gives the most reliable evidence, whether a baby is thriving or not, sanitarians now teach that parents should, throughout the first year, weigh their babies and record the result *every week*, as is now habitually done in the best hospitals and asylums for infants.

During the first three days of life there is always a loss of weight which should be fully regained by the seventh day, by which date a baby ought to weigh fully as much as at birth. During the next three weeks there should be a gain of at least from two to four ounces every week. The greatest gain of weight throughout life is during the first five months, the maximum being usually attained during the second month, that is, when a baby is said to be one month (30 to 60 days) old. The increase during this maximum month should be from four to seven ounces weekly, and during the three succeeding months about

five ounces weekly. During the remaining seven months of the first year the gain should be at least two to four ounces weekly. The gain is less than indicated at times when the infant may suffer, whether from teething or other cause.

TABLE OF WEIGHT, HEIGHT AND CHEST-GIRTH, FROM  
BIRTH TO THIRTY YEARS OF AGE.

N. B. The new-born baby's weight: average 7 pounds; ordinary range, 5 to 8 pounds; extremes,  $3\frac{1}{2}$  to 12 pounds. The average height is  $19\frac{1}{2}$  inches; the extremes 16 to 22 inches.

AGE.	Weight, (with clothing after 1 yr.)	Height, (without shoes.)	Chest-Girth, (empty.)
Birth.	7 lbs.	19.5 inches.	13.2 in.
1 Month.	$7\frac{3}{4}$	20.5	
2 "	$9\frac{1}{2}$	21	
3 "	11	22	15
4 "	$12\frac{1}{2}$	23	
5 "	14	23.5	
6 "	15	24	16
7 "	16	24.5	
8 "	17	25	
9 "	18	25.5	
10 "	19	26	
11 "	20	26.5	
1 Year.	21 to 24	27	17.2
2 "	28	32	
3 "	32	35.5	
4 "	36	38.5	
5 "	40 to 50	40 to 41	21.3
10 "	60 to 67	50 to 53	25
15 "	100 to 110	61 to 64	30
20 "	110 to 150	62 to 67.5	35
30 "	120 to 155	62 to 67.5	36

[REMARKS ON THE ABOVE TABLE.—At one year the weight (which is 19 to 21 lbs. without clothes) is given of 24 lbs., *with clothes*, and the weight at succeeding ages is also given *with clothes*, which are said to weigh about 3 lbs., at 5 years; 4 lbs., at 8 years; 8 lbs. at 15 years; and 9 lbs., for adults.

The two sets of figures given in the columns of weight and height are intended to indicate, 1st, females and less developed males, and 2d, well developed males. The chest-girth is for males. Growth after the fifth year is sufficiently regular to render needless the specification of other ages than those given.]

Finally, the growth of the head, containing the brain on which man's superiority depends, deserves reference. While from birth to full growth the body elongates three to four times, the head only doubles its length. The greatest growth is during the first two years, and by the seventh year its growth is so nearly completed, that Dr. Hammond asserts, that the hat which fits a boy seven years old, will fit him when a man. Quetelet's table on the subject does not fully confirm this assertion.



